

TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.

In Re Application Of:

ANDREW B. WOODSIDE, et al

Application No.

09/607,864

Filing Date

6/30/2000

Examiner

Lawrence D. Ferguson

Customer No.

23980

Group Art Unit

1774

Confirmation No.

Invention:

COMPOSITES COMPRISING FIBERS DISPERSED IN A POLYMER MATRIX HAVING IMPROVED SHIELDING WITH LOWER AMOUNTS OF CONDUCTIVE FIBERS

COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on

The fee for filing this Appeal Brief is: \$500.00

- ☐ A check in the amount of the fee is enclosed.
- ☐ The Director has already been authorized to charge fees in this application to a Deposit Account.
- ☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 16-0325
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Signature

Dated: 05/17/2005

JOHN A. MOLNAR, JR.
Reg. No. 36,611
Parker-Hannifin Corporation
6035 Parkland Boulevard
Cleveland OH 44124-4141
Phone: 216-896-2212
Fax: 216-896-4027
e-mail: jmolnar@parker.com

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Signature of Person Mailing Correspondence

JOHN A. MOLNAR, JR.

Typed or Printed Name of Person Mailing Correspondence

CC:

MAY 19 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Andrew B. Woodside, *et al.*

Serial No. 09/607,864

Filed: June 30, 2000

For: Composites Comprising Fibers Dispersed in a
Polymer Matrix Having Improved Shielding
With Lower Amounts of Conductive Fibers

Examiner Lawrence D. Ferguson
Group Art Unit 1774

Before the Board of Patent
Appeals and Interferences

May 17, 2005

Cleveland, Ohio 44124-4141

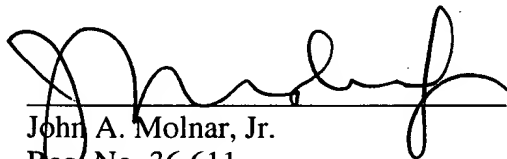
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ALEXANDRIA, VA 22313-1450

APPELLANTS' BRIEF ON APPEAL

Submitted herewith in triplicate in accordance with 37 C.F.R. § 1.192 is Appellants' Brief on Appeal. Reversal of the Examiner's rejection of the appealed claims and the allowance thereof is respectfully requested.

The Commissioner is authorized to charge the requisite fee or to credit any overpayment to Deposit Account No. 16-0325 (a separate deposit account authorization is enclosed).

Respectfully submitted,



John A. Molnar, Jr.

Reg. No. 36,611

Attorney for Appellant

PARKER-HANNIFIN CORPORATION

6035 Parkland Boulevard

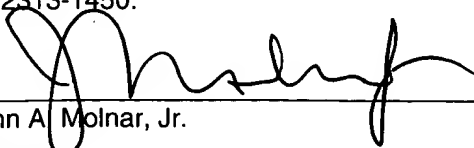
Cleveland, OH 44124-4141

Telephone: (216) 896-2212

Facsimile: (216) 896-4027

CERTIFICATE OF MAILING

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John A. Molnar, Jr.

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I. REAL PARTY IN INTEREST

Parker-Hannifin Corporation, an Ohio corporation having an address at 6035 Parkland Boulevard, Cleveland, Ohio 44124-4141, owns all right, title and interest in the above-identified application by virtue of an Assignment recorded May 13, 2002, on Reel 012893, Frame 0898.

II. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences are known to Appellants, Appellants' legal representative, or assignee, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

- i. Claims originally filed: 1-30.
- ii. Claims canceled: 18-22.
- iii. Claims added: 31-41.
- iv. Claims withdrawn from consideration but not canceled: 1-14 and 28-30.
- v. Claims allowed: none.
- vi. Claims rejected: 15-17, 23-27, and 31-41.
- vii. Claims pending: 15-17, 23-27, and 31-41.
- viii. Claims on appeal: 15-17, 23-27, and 31-41.

IV. STATUS OF AMENDMENTS

Thirty (30) claims were submitted in the subject application as originally filed.

A first Office action was mailed on November 30, 2001, rejecting claims 15-27 and withdrawing claims 1-14 and 28-30 as being drawn to a non-elected invention. Responsive to that action, an amendment was filed on May 29, 2002, amending claims 17, 24, and 26.

A second and final Office action, mailed August 27, 2002, maintained the rejection of claims 15-27. A response under 35 U.S.C. § 1.116 was filed on November 25, 2002, proposing to amend claim 15.

An Advisory Action mailed December 18, 2002, denied entry of the amendment of November 25, 2002, as raising new issues. A request for continued examination (RCE) was filed on January 14, 2003.

An office Action in response to Applicants' filing of the RCE was mailed on April 9, 2003, entering Applicants' proposed amendment to claim 15, and rejecting claims 15-27. A response was filed on September 16, 2003, amending claim 15, canceling claims 18-22, and adding claims 31-41.

An Office action dated November 14, 2004, set a 3 month period for reply extendible under the provisions of 37 CFR 1.136(a). However, on March 15, 2004, the Office issued a Notice of Abandonment. In this regard, it appeared that the action dated November 14, 2004, was intended to be a notice of non-compliant amendment setting a 30 day period for reply, but the action actually sent was a copy of an earlier action dated April 9, 2003, to which Applicant had responded in an amendment dated September 16, 2003 which was found to be non-compliant.

Upon Applicants' petition filed April 14, 2004, a notice of non-complaint amendment was mailed on May 14, 2004. Applicants resubmitted the corrected section of the non-compliant amendment to the Office on May 18, 2004.

A final Office action was mailed on September 22, 2004, rejecting claims 15-17, 23-27, and 31-41. This appeal followed.

The claims pending in the application therefore are 15-17, 23-27, and 31-41, all of which are subject to the instant appeal. A clean copy of those claims is annexed hereto as "Appendix A."

V. SUMMARY OF THE INVENTION

The present invention as claimed is directed to pellets which may be used for molding electrically conductive composite plastic articles formed of conductive fibers dispersed in a polymer matrix. [See Specification, at page 1, ll. 6-9]. Such composites may be used for electromagnetic interference (EMI) shielding. [page 1, ll. 9-10].

The pellets themselves are formed as having a core which may be a bundle of electrically conductive fiber strands, which may be nickel or other metal coated carbon or graphite fibers. [page 4, ll. 18-23; page 8, l. 14-25]. Such strands, which may be provided as a tow or other length, may be wire-die coated or otherwise encased in a plastic or other polymer sheath to

thereby create a length of a sheathed strand which then may be chopped to form the claimed pellets. [page 4, ll. 11-14].

Prior to being encased in plastic, the strands of the conductive fiber are chemically treatment with an organic wetting agent, such as a monomer, having a viscosity at a temperature range of from 80 °C – 180 °C no greater than 1500 cps, and, preferably, no greater than 200 cps. [page 4., l. 24, bridging page 5, l. 7].

The chemical treatment assists in effecting a more uniform dispersion of the conductive fibers when the pellets are molded or otherwise formed into the composite articles. The more uniform dispersion of conductive fibers may improve the EMI shielding properties of the composite articles. [See pages 9-32, Examples 1-33].

VI. ISSUES

Did the Examiner err in finally rejecting claims 15-17, 23, and 25-27 under 35 U.S.C. § 103(a) as being unpatentable over Kosuga *et al.* (U.S. Patent No. 4,960,642)?

Did the Examiner err in finally rejecting claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Kosuga *et al.* (U.S. Patent No. 4,960,642) in view of in view of Kobayashi *et al.* (U.S. Patent No. 4,356,228)?

Did the Examiner err in finally rejecting claims 31-41?

VII. GROUPING OF CLAIMS

For the purpose of the present appeal only, it is Applicants-Appellants' intention that the claims be grouped as follows:

- i. Independent claims 15 and 31 are considered to be patentable independently of each other and of the other claims;
- ii. Claims 16-17 and 23-27 are considered to stand or fall together with independent claim 15 from which each depends; and
- iii. Claims 32-41 are considered to stand or fall together with independent claim 31 from which each depends.

VIII. ARGUMENT

The Examiner erred in finally rejecting claims 15-17, 23, and 25-27 under 35 U.S.C. § 103(a) as being unpatentable over Kosuga et al. (U.S. Patent No. 4,960,642).

Claims 15-17, 23, and 25-27 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over unpatentable over Kosuga *et al.* (U.S. Patent No. 4,960,642).

Kosuga has been cited as showing pellets for making EMI shielding materials, the pellets comprising carbon fibers, and an organic coating of a thermoplastic resin oligomer having a viscosity of not more than 10,000 centipoise (cps) when melted, and a thermoplastic resin coating. Although having acknowledged that Kosuga does not show that the resin oligomer has a viscosity at 80-180°C as specified in the instant claims, the Examiner is of the opinion that it would have been obvious to use a material having such viscosity since: (1) “Kosuga uses the same organic thermoplastic resin oligomer materials as in Applicants’ invention;” and (2) “it is known in the art that such oligomers would have those viscosities.” [Office action mailed September 22, 2004, at page 3].

Considering then independent claim 15, the claim recites that the organic material used to coat the core of conductive fibers has a viscosity of “no greater than 200 cps.” In this regard, MPEP § 2144.05 may be instructive insofar as Kosuga appears to disclose, as to its oligomers having viscosities of not more than 10,000 cps [See Kosuga *et al.*, at col. 3, ll. 1-5], a range “so broad as to encompass a very large number of possible distinct compositions,” *citing In re Peterson*, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). This situation may be “analogous to the obviousness of a species when the prior art broadly discloses a genus.” *Id.* In the case of such a situation, an applicant can rebut a prima facie case of obviousness based on overlapping ranges by showing that the claimed range achieves unexpected results relative to the prior art range, MPEP § 2144.05, *citing In re Woodruff*, 16 USPQ2d 1034 (Fed. Cir. 1990), or by showing that the art teaches away from the claimed invention, *Id.*, *citing In re Geisler*, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

As to such showings, Applicants submit that Kosuga requires the use of extruders or other high-pressure application to effect the impregnation of the fibers. [See Kosuga *et al.*, at col. 2, ll. 32-36; col. 4, ll. 32-34, 53-60, and 63-68; col. 5, ll. 3-9, 12-16, 28-34, and 36-38; and col. 6, ll. 14-24 and 26-31]. In contrast, the claimed materials may be impregnated using a bath or other low pressure means. [See Specification, at page 3, l. 21, bridging, page 4, l. 3; and page 5, ll. 8-18]. Thus, it is believed that the claimed pellets may be produced using less expensive and

complicated equipment and, accordingly, more economically than those of Kosuga. Such is a result and advantage of the claimed invention which could not be predicted from the teachings of Kosuga. Indeed, as Kosuga teaches the use of extruders, it is submitted that one of ordinary skill following those teachings would not have been motivated to select, within the realm of the materials encompassed by Kosuga, those having low viscosities approaching that of water which would not be amenable to the drag-induced flow produced in extruders.

Moreover, to the extent that the materials of Kosuga and those of Applicants might be considered to somehow overlap, it is submitted that the Applicants contemplate the use of a different class of materials, e.g., having a degree of polymerization (n) of less than about 20, so as to exhibit a viscosity of not greater than, most preferably, about 200 cps at a temperature range of from 80°C-180°C. [page 5, ll. 1-12]. Kosuga, in contrast, contemplates the use of materials, whether or not of the same chemical composition, nonetheless being different as having a relatively higher degree of polymerization, e.g., $n < 300$, and, accordingly, a relatively higher viscosity with the claimed range.¹ [See col. 2, ll. 32-56]. Indeed, in Example 1 of Kosuga, although the oligomer is heated to a higher temperature of 200°C, such material nonetheless exhibits a viscosity of 1000 cps which is well outside of Applicants' claimed range of "no greater than 200 cps."

Accordingly, it is submitted that one following the teachings of Kosuga *et al.* would not have been motivated to use the very low viscosity coating materials to which the claims at issue, namely independent claim 15 and dependent claims 16-23 and 25-27, are directed.

The Examiner erred in finally rejecting claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Kosuga et al. (U.S. Patent No. 4,960,642) in view of Kobayashi et al. (U.S. Patent No. 4,356,228).

Claim 24 stands finally rejected under 35 U.S.C. § 103(a) as being unpatentable over the Kosuga *et al.* reference in view of Kobayashi *et al.* (U.S. Patent No. 4,356,228).

Dependent claim 24 lists certain organic materials for the coating used in the pellets of claim 15. The Examiner has noted that the Kosuga reference does not show the oligomers listed in claim 24. [Office action mailed September 22, 2004, at page 3]. The Kobayashi reference has

¹ Applicants are mindful that a degree of polymerization is not claimed in and of itself. Rather, it is on the basis of the recited viscosity that Applicants consider the claims to distinguish over Kosuga. The degree of polymerization is mentioned only to show how the claimed and the reference materials could have different viscosities even if the chemical constituents of those materials may be the same.

been cited as disclosing carbon fiber reinforced composites which include as the matrix resins polyesters, poly(bisphenol A carbonate), polysulfones, styrene resins, and acrylic resins. The Examiner is of the opinion that it would have been obvious to use a bisphenol A resin in the organic thermoplastic resin oligomer coating of the present invention since bisphenol A, polyester, and acrylic resins are functional equivalents.

However, and in contrast to both claim 24 and claim 15 from which claim 24 depends, the resins listed in Kobayashi appear to be used as the matrix resin rather than, as is claimed, as a coating which is applied to the fibers and which coated fibers, in turn, are encased in a matrix resin to form a pellet. In any event, if such materials would be used as a coating, the Kobayashi reference provides no additional teaching as to the selection of such materials as having a viscosity of "no greater than 200 cps." Further, should the Examiner consider the materials of Kobayashi to be the same as those of claim 24, it is noted that claim 24 recites "bisphenol A" while Kobayashi discloses poly(bisphenol A carbonate), i.e., polycarbonate.

Moreover, to the extent that the Kosuga and Kobayashi references might be used "in combination to show that the resins are functional equivalents and can be substituted for one another" [Office action dated August 27, 2002, at page 5], it is well-settled that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting the combination. *In re Geiger*, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987), citing *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1987), See also *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1579; 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (noting that the "absence of such a suggestion to combine is dispositive in an obviousness determination"). The Federal Circuit has cautioned that the suggestion to combine requirement is a safeguard against the use of hindsight combinations to negate patentability. See *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998).

Applicants are mindful that evidence of a suggestion, teaching, or motivation to combine prior art references may be found not just in the references themselves, but also in the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved, although "the suggestion more often comes from the teachings of the pertinent references." *In re Dembiczak*, 175 F.3d at 994, 999 (Fed. Cir. 1999), citing *Rouffet*, 149 F.3d at 1355. Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the reason to combine must nevertheless be "clear and particular." *Winner Intern. Royalty Corp.*

v. Wang, 202 F.3d 1340, 1348-49 (Fed. Cir. 2000), citing *Dembiczak*, 175 F.3d at 999. "Close adherence to this methodology is especially important in the case of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.' " *Dembiczak*, 175 F.3d at 999, quoting *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983).

Applicants have endeavored to point out that the resins listed in the Kobayashi reference appear to be used as the matrix resin rather than, as is claimed, as a coating which is applied to the fibers and which coated fibers, in turn, are encased in a matrix resin to form a pellet. On this basis, Applicants submit that one of ordinary skill in the art, following the teachings of Kobayashi, would not have been motivated to substitute those resins, which in fact appear to be true polymers rather than monomers or oligomers, for the oligomer resins coating materials of the Kosuga reference.

Of course, it might be assumed that it is always obvious to interchange materials that are known in the art. Such an assumption, however, would bespeak of the impermissible use of hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. See *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988). Accordingly, Applicants submit that even if the combination proposed by the Examiner would have been sufficient to render the claimed invention obvious, there has yet to be articulated a suggestion or other motivation in the prior art or otherwise which would have lead one of ordinary skill in the art to have combined the cited references in the manner proposed.

Thus, it is submitted that claim 24, as well as claim 15 from which claim 24 depends, should be considered to distinguish over the Kosuga and Kobayashi references, whether taken singly or in combination.

The Examiner erred in finally rejecting claims 31-41.

Claims 31-41 stand finally rejected, although the basis for the reject has not been articulated by the Examiner.

In any event, independent claim 31 recites "an organic material having a viscosity at a temperature range of from 80 °C – 180 °C no greater than 1500 cps, *wherein the organic material comprises a monomer.*" [Emphasis added]. As neither the Kosuga nor the Kobayashi reference upon which the Examiner has relied in his rejections of the other claims appears to disclose the

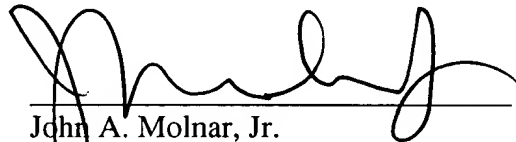
use of monomers, claim 31 should be considered to be allowable over the art made of record. Similarly, claims 32-41 further describe the pellets of claim 31, and therefore should be considered allowable for the same reason.

IX. CONCLUSION

As the present claim program has been shown to properly distinguish over the art made of record, Applicants-Appellants respectfully urge the Board to overrule the rejection of the appealed claims and to permit the application to pass to issue.

Respectfully submitted,

Dated: May 17, 2005



John A. Molnar, Jr.
Reg. No. 36,611
Attorney for Applicants-Appellants

APPENDIX A
THE CLAIMS ON APPEAL

15. A plurality of pellets capable of being consolidated into an electrically shielded composite wherein said pellets comprise a core of conductive fibers; wherein said core has a coating comprising an organic material having a viscosity at a temperature range of from 80 °C – 180 °C no greater than 200 cps.

16. The pellets of claim 15 wherein the pellets are capable of being consolidated into a composite without the addition of any other material.

17. The pellets of claim 15 wherein the pellets have an average length of between 2mm to 12mm.

23. The pellets of claim 15 wherein the organic material comprises monomers or oligomers or mixtures thereof.

24. The pellets of claim 15 wherein the organic material is chosen from the group consisting of bisphenol A, propoxylated bisphenol A, diphenyl ether, diphenyl sulfone, stilbene, diglycidyl ether of bisphenol A, triglycidylisocyanurate, citric acid, pentaerythritol, dicyandiimide, 4,4'-sulfonyldianiline, 3,3'-sulfonyldianiline, stearate-capped propyleneglycol fumarate oligomer, butoxyethylstearate, ethylene carbonate, sorbitan monostearate, hydrogenated vegetable oil, and mixtures thereof.

25. The pellets of claim 15 wherein the polymer is a thermoset or thermoplastic polymer.

26. The composite of claim 15 wherein the polymer is chosen from the group consisting of polycarbonate, acrylonitrile butadiene styrene, polycarbonate acrylonitrile butadiene styrene copolymer, polybutylene terephthalate, styrene, polypropylene, and nylon.

27. The pellets of claim 15 wherein the core comprises chosen from the group consisting of carbon fiber, metalized carbon fiber, metalized glass fiber, metal fiber, metal alloy fiber and mixtures thereof.

31. A plurality of pellets capable of being consolidated into an electrically shielded composite wherein said pellets comprise a core of conductive fibers; wherein said core has a coating comprising an organic material having a viscosity at a temperature range of from 80 °C – 180 °C no greater than 1500 cps, wherein the organic material comprises a monomer.

32. The pellets of claim 31 wherein the pellets are capable of being consolidated into a composite without the addition of any other material.

33. The pellets of claim 31 wherein the pellets have an average length of between 2mm to 12mm.

34. The pellets of claim 31 wherein the core is a strand comprising bundles of at least 40 conductive fibers.

35. The pellets of claim 31 wherein the organic material has a viscosity at a temperature range of from 80 °C – 180 °C no greater than 400 cps.

36. The pellets of claim 31 wherein the organic material has a viscosity at a temperature range of from 80 °C – 180 °C no greater than 200 cps.

37. The pellets of claim 31 wherein the organic material has a viscosity at a temperature range of from 80 °C – 180 °C no greater than 75 cps.

38. The pellets of claim 31 wherein the organic material has a viscosity at a temperature range of from 80 °C – 180 °C no greater than 5 cps.

39. The pellets of claim 31 wherein the organic material is chosen from the group consisting of bisphenol A, propoxylated bisphenol A, diphenyl ether, diphenyl sulfone, stilbene,

diglycidyl ether of bisphenol A, triglycidylisocyanurate, citric acid, pentaerythritol, dicyandiimide, 4,4'-sulfonyldianiline, 3,3'-sulfonyldianiline, butoxyethylstearate, ethylene carbonate, sorbitan monostearate, hydrogenated vegetable oil, and mixtures thereof.

40. The pellets of claim 31 wherein the polymer is a thermoset or thermoplastic polymer.

41. The composite of claim 31 wherein the polymer is chosen from the group consisting of polycarbonate, acrylonitrile butadiene styrene, polycarbonate acrylonitrile butadiene styrene copolymer, polybutylene terephthalate, styrene, polypropylene, and nylon.